

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Currently Amended) A hydrophilic inclusion complex consisting essentially of nano-sized particles of a water-insoluble lipophilic particles compound surrounded by and entrapped within; and
an amphiphilic polymer, wherein said ~~amphiphilic polymer consists of a single amphiphilic polymer, which surrounds said nano-sized lipophilic particles to form said inclusion complex; wherein said amphiphilic polymer renders said inclusion complex hydrophilic in water lipophilic compound soluble in water and bioavailable.~~
2. (Original) The hydrophilic inclusion complex as recited in claim 1, wherein said lipophilic particles comprise organic materials selected from the group consisting of pharmaceutical compounds, food additives, cosmetics, agricultural products and pet foods.
3. (Previously Amended) The hydrophilic inclusion complex as recited in claim 2, wherein said lipophilic particles are selected from the group consisting of: vitamins, antibiotics and hormones.
4. (Original) The hydrophilic inclusion complex as recited in claim 2, wherein said lipophilic particles are pharmaceutical compounds.
5. (Original) The hydrophilic inclusion complex as recited in claim 1, wherein said nano-sized hydrophilic lipophilic particles interact with said amphiphilic polymer via the formation of non-valent bonds.
6. (Original) The hydrophilic inclusion complex as recited in claim 1, wherein said amphiphilic polymer and said lipophilic particles form a polymer complex having a hydrophilic-lipophilic balance that renders said polymer complex soluble in water.

7. (Original) The hydrophilic inclusion complex as recited in claim 1, wherein said nano-sized insoluble lipophilic particles are in the range of from 10-100 nanometers in size.

8. (Currently Amended) A method for forming a hydrophilic inclusion complex, the method comprising the steps of:

- a. preparing a polymer solvent comprising amphiphilic polymer molecules in an aqueous solvent, wherein the amphiphilic polymer molecules in said aqueous solvent consists of a single amphiphilic polymer;
- b. preparing a carrier solvent comprising lipophilic compounds in a non-aqueous solution;
- c. adding said carrier solution to said polymer solution to form an emulsion
- d. dispersing said lipophilic compounds in said emulsion by adding said emulsion to a turbulent zone in said polymer solution wherein said lipophilic compounds form nano-sized lipophil particles in a nano-emulsion;
- e. removing said carrier solvent from said nano-emulsion, wherein said polymer molecules surround said nano-sized lipophil particles to form said hydrophilic inclusion complex,

wherein said hydrophilic complex consists essentially of nano-sized particles of a water-insoluble lipophilic particles compound surrounded by and entrapped within; and an amphiphilic polymer,

wherein said ~~amphiphilic polymer consists of a single amphiphilic polymer, which surrounds said nano-sized lipophilic particles to form said inclusion complex; wherein said amphiphilic polymer renders said inclusion complex hydrophilic in water~~ lipophilic compound soluble in water and bioavailable.

9. (Original) The method as recited in claim 8, wherein said polymer solution in said preparing step is contained in a first vessel of a chemical reactor and said lipophil solution is contained in a second vessel of a chemical reactor.

10. (Original) The method as recited in claim 9, wherein said dispersing step occurs within a turbulent flow in the polymer solution within said chemical reactor.

11. (Previously Amended) The method as recited in claim 8, wherein said lipophil solution is comprised of lipophilic compounds selected from the group consisting of: vitamins, antibiotics and hormones.
12. (Original) The method as recited in claim 8, wherein said lipophilic compounds are insoluble in water.
13. (Original) The method as recited in claim 8, wherein said polymer is an amphiphilic polymer.
14. (Previously Amended) The method as recited in claim 8, wherein said amphiphilic polymer comprises natural polysaccharides.
15. (Original) The method as recited in claim 8, wherein said removing step further comprises the step of evaporating said carrier solvent via vacuum distillation.
16. (Original) The method as recited in claim 8, wherein said emulsion in said adding step has a Reynolds number of not less than 10,000.
17. (Original) The method as recited in claim 8, further comprising the step of heating said mixture of polymer solution with carrier to provide carrier's steam which condenses and dissolves said lipophilic compounds to form said lipophilic solution.
18. (Original) The method as recited in claim 17, wherein said polymer solution is heated to a temperature above the boiling point of the carrier solution but lower than the boiling point of the polymer solution.

Claims 19-32 (Cancelled)

33. (Currently Amended) A process for forming a nano-emulsion for the preparation of a water soluble inclusion complex, the process comprising the steps of:

- a. preparing an emulsion comprising a solution of amphiphilic polymer molecules in an aqueous solvent and a solution of lipophilic compounds in a non-aqueous solvent carrier, wherein the amphiphilic polymer molecule in said aqueous solvent is a single amphiphilic polymer;
- b. dispersing said lipophilic compound within said emulsion, wherein said lipophilic compound forms nano-sized particles, said nano-sized particles forming a nano-emulsion; and
- c. removing said carrier solvent from said nano-emulsion, wherein said polymer molecules surround said lipophilic particles to provide a hydrophilic inclusion complex consisting essentially of nano-sized particles of a water-insoluble lipophilic particles compound surrounded by and entrapped within; and an amphiphilic polymer, wherein said ~~amphiphilic polymer consists of a single amphiphilic polymer, which surrounds said nano-sized lipophilic particles to form said~~ inclusion complex; wherein said ~~amphiphilic polymer~~ renders said ~~inclusion complex hydrophilic in water~~ lipophilic compound soluble in water and bioavailable.

34. (Original) The process as recited in claim 33, wherein prior to the dispersing step, the process further comprises the step of heating the emulsion to a temperature lower than the boiling point of the emulsion, and above the boiling point of the carrier solvent.

35. (Original) The process as recited in claim 33, wherein said preparing, dispersing and removing steps occur in a chemical reactor.

36. (Original) The process are recited in claim 34, wherein said dispersing step occurs within a turbulent flow in the polymer solution within said chemical reactor.

37. (Original) The process as recited in claim 33, wherein said lipophilic compound is selected from the group consisting of: organic materials selected from the group consisting of drugs, food additives, cosmetics, agricultural products and pet foods.

38. (Previously Amended) The process as recited in claim 33, wherein the polymer in said polymer solution comprises natural polysaccharides.

39. (Original) The process as recited in claim 33, wherein prior to the preparing step, the process comprises the step of determining and calculating the characteristics and properties of said polymer molecule and said lipophilic compound to be used in the formation of said inclusion complex.

40. (Original) The process as recited in claim 38, wherein said polymer is selected based upon the molecular weight, dimensions and solubility in non-aqueous solvents of the lipophilic compound to be used in the formation of said inclusion complex.

41. (Original) The process as recited in claim 33, wherein said polymer is selected via an algorithm which considers one or more of the following characteristics of the polymer: molecular weight, basic polymer chain length, length of kinetic unit, solubility in water, degree of solubility, degree of polymeric chain flexibility, integral hydrophilic-lipophilic balance, and polarity of hydrophilic groups.

42. (Original) The process as recited in claim 36, wherein said emulsion which enters the turbulent flow in said dispersing step has a Reynolds number of not less than 10,000.

43. (Currently Amended) A method for forming a water-soluble inclusion complex in a chemical reactor, the method comprising the steps of:

- a. preparing an emulsion in a first vessel of said chemical reactor, said emulsion comprising a carrier solvent and an amphiphilic polymer solution, wherein the amphiphilic polymer molecule is a single amphiphilic polymer;
- b. adding an lipophilic compound to a second vessel of said chemical reactor;
- c. heating said emulsion wherein vapor from said emulsion condenses in said second vessel and dissolves said lipophil to form a lipophilic solution;
- d. adding said lipophilic solution to said emulsion in said first vessel, said lipophil solution being added to said first vessel in the vicinity of a disperser apparatus positioned in said first vessel;
- e. dispersing said lipophilic solution wherein said lipophilic compounds form nano-sized lipophil particles in a nano-emulsion;

f. removing said carrier solvent from said nano-emulsion wherein said amphiphilic polymer surround said nano-sized lipophil particles to provide a hydrophilic inclusion complex consisting essentially of

nano-sized particles of a water-insoluble lipophilic particles compound surrounded by and entrapped within; and

an amphiphilic polymer, wherein said amphiphilic polymer consists of a single amphiphilic polymer, which surrounds said nano-sized lipophilic particles to form said inclusion complex; wherein said amphiphilic polymer renders said inclusion complex hydrophilic in water
lipophilic compound soluble in water and bioavailable.

44. (Original) The method as recited in claim 43, wherein said dispersing step occurs within a turbulent flow in the polymer solution within said first vessel.

45. (Previously Amended) The method as recited in claim 43, wherein said lipophil solution is comprised of lipophilic compounds selected from the group consisting of: vitamins, antibiotics and hormones.

46. (Previously Amended) The method as recited in claim 43, wherein said amphiphilic polymer comprises natural polysaccharides.

47. (Original) The method as recited in claim 43, wherein said removing step further comprises the step of evaporating said carrier solvent via vacuum distillation.

48. (Original) The method as recited in claim 43, wherein said emulsion added to said polymer solution in said adding step has a Reynolds number of not less than 10,000.

49. (Original) The method as recited in claim 43, wherein said polymer solution is heated to a temperature above the boiling point of the carrier solvent but lower than the boiling point of the polymer solution.

50. (Previously Added) The hydrophilic inclusion complex as recited in claim 1, wherein said hydrophilic inclusion complex consists of said nano-sized water-insoluble lipophilic particles and said amphiphilic polymer.

51. (Previously Added) The method as recited in claim 8, wherein said hydrophilic inclusion complex consists of said nano-sized water-insoluble lipophilic particles and said amphiphilic polymer.

52. (Previously Added) The method as recited in claim 34, wherein said hydrophilic inclusion complex consists of said nano-sized water-insoluble lipophilic particles and said amphiphilic polymer.

53. (Previously Added) The method as recited in claim 43, wherein said hydrophilic inclusion complex consists of said nano-sized water-insoluble lipophilic particles and said amphiphilic polymer.